

JACK BAR QUICK RELEASE

1 Background of the Invention.

2 Field of the Invention

3 The invention pertains to longitudinally adjustable dunnage
4 jack bar assemblies having a carriage slidably mounted on a jack
5 bar longitudinally adjustable by an operating lever having power
6 and lock pawls mounted thereon.

7 Description of the Related Art

8 Jacks and hoisting devices utilizing an elongated rigid
9 toothed tube or bar having a movable carriage thereon wherein the
10 carriage includes a pivoted operating lever controlling the
11 movement of power and lock pawls have been known for many years.
12 As illustrated in U.S. Patents 1,175,211; 1,802,067; 1,974,491;
13 2,501,603 and 3,737,147, such devices have commonly been employed
14 in the jack art, and bumper jacks using a toothed column were
15 popularly employed as an automobile jack in the 1970's.

16 The principles existing with bumper jacks and the like have
17 been utilized in the freight dunnage art wherein toothed jack bars
18 extend between the sides of a van freight storage space having a
19 carriage mounted thereon to which a van engaging abutment is
20 mounted. By oscillating the carriage operating lever, the power
21 and locking pawls mounted upon the operating lever translate the
22 carriage on the jack bar to selectively adjust the length of the
23 jack bar assembly permitting the jack bar to be tightly held in
24 place by the van walls as the carriage is moved to lengthen the

1 overall length of the jack bar assembly. As with automobile jacks,
2 a dunnage jack bar assembly includes a release lever which permits
3 the sequence of operation of the power and lock pawls to be
4 reversed so that the length of the assembly can be retracted to
5 permit the jack bar to be removed from its operative relationship
6 to the van walls. While such operation of the reversing lever
7 permits the carriage to be incrementally translated on the jack bar
8 in a "retracting" direction, the spring biasing the locking lever
9 toward the jack bar remains effective and prevents a rapid movement
10 of the carriage on the jack bar in the retracting direction. A
11 rapid translation of the carriage on the jack bar is only possible
12 in extension direction.

13 In many instances, it is desirable to rapidly slide the
14 carriage on the jack bar in either direction in order to permit a
15 rapid initial jack bar assembly length adjustment prior to
16 incrementally lengthening the jack bar assembly by oscillating the
17 operating lever, but previously, such a release of the carriage as
18 to permit rapid bi-directional movement on the jack bar has not
19 been available.

20 Objects of the Invention.

21 It is an object of the invention to provide a toothed dunnage
22 jack bar having a carriage movably mounted thereon wherein the
23 carriage includes both power and lock pawls biased toward the jack
24 bar by spring means, and wherein a quick release actuator permits
25 the lock lever pawl to be lifted against its biasing spring to
26 permit rapid adjustment of the carriage.

1 It is another object of the invention to provide a toothed
2 dunnage jack bar having a carriage operated by a pivotal operating
3 lever wherein the lock pawl carried by the carriage may be held
4 away from the jack bar teeth against the biasing force produced by
5 a spring associated with the lock pawl.

6 Yet another object of the invention is to provide a toothed
7 dunnage jack bar assembly which includes a carriage slidably
8 mounted upon an elongated jack bar wherein a quick release actuator
9 of the lever type is mounted upon the carriage operating lever and
10 is readily accessible by the operator to permit bi-directional
11 movement of the carriage on the jack bar in a quick release
12 operation.

13 Summary of the Invention.

14 A conventional toothed dunnage jack bar assembly includes a
15 carriage slidably mounted upon the jack bar on which an operating
16 lever is pivotally mounted. The operating lever includes an
17 operating pawl spring biased toward the jack bar teeth and
18 pivotally mounted on the operating lever so as to engage the jack
19 bar teeth as the lever is moved in a forward or operating
20 direction. A lock pawl is also pivotally mounted on the carriage,
21 usually upon the operating lever pivot, having an outer end for
22 engaging the jack bar teeth, and a spring is employed to bias the
23 lock pawl toward the jack bar teeth.

24 A quick release lever is also pivotally mounted on the
25 operating lever having an end adjacent a hand grip defined on the
26 operating lever for easy access by the operator. The other end of

1 the quick release lever engages the lock pawl spring whereby
2 actuation of the quick release lever from an inoperative position
3 to an operative position lifts the lock pawl against its biasing
4 force to remove the lock pawl from the jack bar teeth. Upon the
5 locking lever being lifted from the jack bar teeth, the carriage
6 can be quickly moved in either direction on the jack bar providing
7 a quick adjustment of the length of the jack bar which aids in
8 locating the jack bar within the van as desired, and permitting a
9 "rough" adjustment of the jack bar length.

10 In the practice of the invention, a single leaf spring is used
11 to bias both the power pawl and the lock pawl toward the teeth of
12 the jack bar. The configuration of the pawl spring includes a
13 substantially flat land portion adjacent the spring end anchored to
14 the lock pawl and the quick release lever engages this spring flat
15 when the quick release lever is pivoted to its operative position.
16 In this manner, the locking pawl spring is rendered inoperative and
17 is actually used to "lift" the lock pawl from the jack bar teeth.

18 The quick release lever may be readily mounted upon the jack
19 bar operating lever pivoted to the carriage and the practice of the
20 invention adds very little cost to the jack bar.

21 Brief Description of the Drawings.

22 The aforementioned objects and advantages of the invention
23 will be appreciated from the following description and accompanying
24 drawings wherein:

25 FIG. 1 is an elevational view, partially sectioned,
26 illustrating a jack bar and carriage assembly in

1 accord with the invention illustrating the quick
2 release actuator in its inoperative position and
3 the lock pawl engaging the jack bar teeth, and
4 FIG. 2 is an elevational sectional view similar to FIG. 1
5 illustrating the quick release lever actuator in
6 its operative position engaging the spring of the
7 lock pawl to lift the lock pawl from the jack bar
8 teeth and permit quick adjustment of the carriage
9 thereon.

10 Description of the Preferred Embodiment.

11 With reference to FIG. 1, an elongated jack bar assembly is
12 illustrated at 10, and the jack bar itself is usually of a box
13 construction having a straight or lower edge 12 and an upper edge
14 upon which teeth 14 are formed. The teeth 14 may be formed by a
15 rolling operation. The purpose of the jack bar assembly 10 is to
16 restrain the movement of freight within a van or box car and one
17 end of the jack bar assembly 10 will include a fitting, not shown,
18 for reception into a wall mounted track, or a friction pad is
19 mounted upon the end of the jack bar for engaging the van wall.

20 The other end of the jack bar assembly 10 also includes a
21 friction pad or track receiving fitting, not shown, which is
22 mounted upon the carriage 16 extending to the left of the carriage,
23 FIG. 1. The carriage 16 is longitudinally translatable upon the
24 jack bar, and is usually formed of a sheet stamping or a pair of
25 stampings riveted together wherein a box opening is formed in the

1 carriage about the jack bar defining track surfaces 18 guiding the
2 carriage movement upon the jack bar.

3 A pivot 20 is mounted upon the carriage 16 pivotally
4 supporting the operating lever 22 which includes a handle 24 which
5 may be gripped by the operator wherein the lever 22 may be
6 oscillated about the pivot 20.

7 A power pawl 26 is pivotally mounted upon the operating lever
8 22 by pivot 28 which, as will be appreciated from FIG. 1, is spaced
9 from the axis of pivot 20. The pawl 26 includes a point 30 adapted
10 to selectively engage the teeth 14 of the jack bar.

11 A smaller lock pawl 32 is pivotally mounted upon pivot 20 and
12 includes a point 34 adapted to engage the jack bar teeth 14. A
13 spring anchor 36 is defined upon power pawl 26, while the spring
14 anchor 38 is defined on the lock pawl 32.

15 The pawls 26 and 32 are resiliently biased toward the jack bar
16 teeth 14 by a shaped leaf spring 40. One end of the leaf spring 40
17 is attached to the spring anchor 36, while the other end of the
18 leaf spring is attached to spring anchor 38, and the spring
19 includes a bridge section 42, and a flat land 44 defined close to
20 the spring anchor 38 for cooperation with the quick release
21 actuator, as later described.

22 A reversing release lever 46 is mounted upon the carriage 16
23 and engages the spring bridge section 42 wherein the spring action
24 can be modified by the reversing lever 46 when it is desired to
25 retract the carriage 16 on the jack bar 10 to shorten the length of
26 the jack bar assembly. When the reversing lever 46 is actuated,

1 the oscillation of the operating lever 22 will permit the carriage
2 to be moved in the direction opposite, or to the right, with
3 respect to the carriage extension direction of movement.

4 A quick release lever 48 which may be of a U cross sectional
5 configuration, is pivotally mounted upon the pivot 50 mounted on
6 the operating lever 22. The quick release lever 48 includes a
7 lower portion 52 which extends under the spring lift land portion
8 44, and an upper portion 54 located on the opposite side of the
9 pivot 50 which is accessible to the operator grasping the handle
10 24. For instance, the operator's thumb can readily be placed upon
11 the upper portion 54 for depressing the same. A torsion spring 56
12 wound about pivot 50 biases the quick release lever 48 in a
13 clockwise direction as viewed in the drawings.

14 In operation, the components will normally be as shown in FIG.
15 1. The spring 56 will have pivoted the quick release lever 48 to
16 a maximum extent in the clockwise direction, and the curved portion
17 of the leaf spring 40 adjacent the land 44 will be engaging the
18 release portion 52 whereby the configuration of the spring 40
19 biases the lock pawl 32 toward the jack bar teeth 14. The spring
20 release lever 46 will be in the position to bias the power pawl 26
21 toward the jack bar teeth 14 and oscillation of the operating lever
22 22 by force applied to the handle 24 will incrementally displace
23 the carriage 16 to the left on the jack bar as viewed in the
24 drawings extending the length of the jack bar assembly forcing the
25 assembly ends against the van sides. In this manner, the jack bar

1 assembly will operate in a manner similar to that shown in the
2 previously cited prior art during a lifting or power cycle.

3 When it is desired to quickly shift the carriage 16 on the
4 jack bar in either direction, the operator depresses the quick
5 release lever upper portion 54 which causes the lower portion 52 to
6 engage the spring land 44, FIG. 2, and raise the spring adjacent
7 the lock pawl anchor 38. This action lifts the lock pawl 32 from
8 the teeth 14 permitting the carriage 16 to be moved in either
9 direction on the jack bar 10, assuming the operating lever 22 is in
10 the position shown wherein the power pawl 26 will also be out of
11 engagement with the teeth 14.

12 Accordingly, the use of the quick release lever 48 permits
13 both pawls 26 and 32 to be lifted from the jack bar teeth 14
14 permitting the carriage 16 to be longitudinally adjusted as desired
15 on the jack bar, and this rapid adjustment of the carriage
16 facilitates the positioning of the jack bar assembly on the van
17 wall sides.

18 It is appreciated that various modifications to the inventive
19 concepts may be apparent to those skilled in the art without
20 departing from the spirit and scope of the invention.